P/2107-239

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:	Confirmation No. 9834
Dieter Kress, et al.	Date: March 20, 2008
Serial No.: 10/601,818	Group Art Unit: 3722
Filed: June 23, 2003	Examiner: Michael Talbot

For: TOOL FOR THE METAL CUTTING MACHINING OF VALVE SEATS

VIA EFS-WEB
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF UNDER 37 C.F.R. §41.37

Sir:

This appeal is taken from the final action of June 20, 2007. In support of the Notice of Appeal filed December 20, 2007, the present Appeal Brief is presented.

I. Real Party in Interest

The real party in interest is the assignee, MAPAL Fabrik für Präzisionswerkzeuge Dr. Kress AG.

II. Related Appeals and Interferences

The Applicant, the assignee and the undersigned attorney are not aware of any related appeals and interferences.

III. Status of Claims

Claims 2-12, 16-18, and 20-25 are pending and on appeal herein.

IV. Status of Amendments

A Response After Final Office Action was filed on December 20, 2007 in response to the final Office Action dated June 20, 2007. In that Response no claim amendments were made. An Advisory Action issued on January 7, 2008 indicating that the Response was entered but that the arguments set forth therein were not considered persuasive. No further Amendments have been submitted.

V. Summary of Claimed Subject Matter

The present application relates to a tool for metal-cutting machining of a surface such as a valve seat in a cylinder head of an internal combustion engine. In particular, the present application relates to the configuration and attachment of the cutting tip thereof as well as a method of metal-cutting machining of such a surface.

More specifically, independent claim 2 of the present application relates to a tool for metal cutting machining a surface in an opening (*See element 1 of Fig. 1 and Specification page 4, lines 5-10*) that includes a cutter tip (*See element 7 of Figure 2 and Specification page 4, lines 11-12*) having at least one geometrically defined cutting edge (*See element 9 of Figure 2 and Specification page 4, lines 11-12*), the cutting edge formed in a straight line (*See Figure 2 and Specification page 6, lines 1-2*) between two adjacent corners (*See elements 35 of Figure 2 and Specification page 5, lines 20-21*) of the cutter tip, wherein the cutter tip is a hexagonally shaped indexable tip (*See Figure 2 and Specification page 5, lines 20-21*) and wherein an angle between each side of the cutter tip and an adjacent side is substantially the same for each side of the cutter tip (*See Figure 2*). The cutter tip has a front side with at least one clamping notch having a V-shaped cross-section formed in the front side (*See element 31 of Figure 2 and Specification page 5, lines 8-10*). Two supporting regions (*See elements 27 and 29 of Figures 2-4 and Specification page 5, lines 10-15*) are provided in the tool for supporting the cutter tip. The supporting regions have support surfaces against which the cutter tip rests (*See Specification page 5, lines 11-12*), and the support surfaces of the supporting region are oriented with respect to each other at an angle (*See Figure 2 and Specification page 5, line 13*), the supporting regions also being so oriented that a line bisecting the angle between the support surfaces runs essentially perpendicular to an active one of the cutting edges (*See Figure 2 and Specification page 5, lines*

13-15), which is the edge that removes metal chips from the surface in the opening, wherein the cutter tip is turnable six times to make six cutting edges available for machining (*See Specification, page 6, lines 4-5*). A clamping claw which holds the cutter tip to the supporting regions is provided (*See element 15 of Figures 2 and 7 and Specification page 4, lines 15-16*) the clamping claw including a clamping lip wherein the clamping lip comes to rest on a front side of the cutter tip (*See element 21 of Figure 2, and Specification page 4, lines 17-18*) and engages the clamping notch (*See element 31 of Figure 2 and page 5, lines 8-12*). The tool and cutter tip thereof are both shaped to be operable for metal cutting machining of valve seats in cylinder heads of internal combustion engines (*See Specification page 4, lines 11-14*)

Independent claim 20 relates to a method for metal cutting machining of a surface in an opening including operating a tool to metal cut machine a surface in an opening (*See element 1 of Fig. 1 and Specification page 4, lines 5-10*). The tool includes a cutter tip (*See element 7 of Figure 2 and Specification page 4, lines 11-12*) having at least one geometrically defined cutting edge (*See element 9 of Figure 2 and Specification page 4, lines 11-12*), the cutting edge formed as a straight line (*See Figure 2 and Specification page 6, lines 1-2*) between two adjacent corners (*See elements 35 of Figure 2 and Specification page 5, lines 20-21*) of the cutter tip, wherein the cutter tip is a hexagonally shaped indexable tip (*See Figure 2 and Specification page 5, lines 20-21*) and wherein an angle between each side of the cutter tip and an adjacent side is substantially the same for each side of the cutter tip (*See Figure 2*). The cutter tip has a front side with at least one clamping notch having a V-shaped cross-section formed in the front side (*See element 31 of Figure 2 and Specification page 5, lines 8-10*). Two supporting regions are provided in the tool for supporting the cutter tip (*See elements 27 and 29 of Figures 2-4 and Specification page 5, lines 10-15*). The supporting regions have support surfaces against which the cutter tip rests (*See Specification page 5, lines 11-12*), and the support surfaces of the supporting region are oriented with respect to each other at an angle (*See Figure 2 and Specification page 5, line 13*), the supporting regions also being so oriented that a line bisecting the angle between the support surfaces runs essentially perpendicular to an active one of the cutting edges (*See Figure 2 and Specification page 5, lines 13-15*), which is the edge that removes metal chips from the surface in the opening, wherein the cutter tip is turnable six times to make six cutting edges available for machining (*See Specification, page 6, lines 4-5*). A clamping claw which holds the cutter tip to the supporting regions is included (*See element 15 of Figures 2 and 7 and Specification page 4,*

lines 15-16), the clamping claw comprising a clamping lip wherein the clamping lip comes to rest on a front side of the cutter tip (*See element 21 of Figure 2, and Specification page 4, lines 17-18*) and engages a clamping notch (*See element 31 of Figure 2 and page 5, lines 8-12*). The tool and cutter tip thereof are both shaped to be operable for metal cutting machining of valve seats in cylinder heads of internal combustion engines (*See Specification page 4, lines 11-14*). The cutter tip is not required to be reset or adjusted when a respective active cutting edge thereof becomes worn (*See Specification page 14, lines 1-5).*

Further, independent claim 23 relates to a tool for metal cutting machining a surface in an opening (*See element 1 of Fig. 1 and Specification page 4, lines 5-10*). The tool includes a cutter tip (*See element 7 of Figure 2 and Specification page 4, lines 11-12*) having at least one geometrically defined cutting edge (*See element 9 of Figure 2 and Specification page 4, lines 11-12*) , the cutting edge formed in a straight line (*See Figure 2 and Specification page 6, lines 1-2*) between two adjacent corners of the cutter tip (*See elements 35 of Figure 2 and Specification page 5, lines 20-21*), wherein the cutter tip is a polygon shaped indexable tip (*See Figure 2 and Specification page 5, lines 20-21*) and wherein an angle between each side of the cutter tip and an adjacent side is substantially the same for each side of the cutter tip (*See Figure 2*) . The cutter tip has a front side with at least one clamping notch having a V-shaped cross-section formed in the front side (*See element 31 of Figure 2 and Specification page 5, lines 8-10*). Two supporting regions are provided in the tool for supporting the cutter tip, against which the cutter tip rests *(See Specification page 5, lines 11-12*). The supporting regions are oriented with respect to each other at an angle (*See Figure 2 and Specification page 5, line13*), the supporting regions also being so oriented that a line bisecting the angle between the supporting regions runs essentially perpendicular to an active one of the cutting edges (*See Figure 2 and Specification page 5, lines 13-15*), which is the edge that removes metal chips from the surface in the opening. The cutter tip is turnable to make multiple cutting edges available for machining (*See Specification, page 6, lines 4-5*). A clamping claw 15 holds the cutter tip to the supporting regions (*See element 15 of Figures 2 and 7 and Specification page 4, lines 15-16*), the clamping claw includes a clamping lip wherein the clamping lip comes to rest on a front side of the cutter tip (*See element 21 of Figure 2, and Specification page 4, lines 17-18*) and engages the clamping notch *See element 31 of Figure 2 and page 5, lines 8-12*). The tool and cutter tip thereof are both

shaped to be operable for metal cutting machining of valve seats in cylinder heads of internal combustion engines (*See Specification page 4, lines 11-14*).

VI. Grounds of Rejection to be Reviewed

The following grounds of the rejection are presented for review:

1. Whether claims 2, 3 and 20-25 were correctly rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over "Kress '889 (U.S. Patent No. 5,915,889) in view of Kress '483 (U.S. Patent No. 4,971,483).

2. Whether claims 4, 5 and 7 were correctly rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 in view of Kress '483 and further in view of Breuning '482 (U.S. Patent No. 3,271,842).

3. Whether claim 6 was correctly rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 in view of Kress '483 and further in view of Breuning '842 and Erickson '650 (U.S. Patent No. 4,202,650).

4. Whether claim 8 was correctly rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 in view of Kress '483 and further in view of Breuning '842 and previously cited Satran '724 (U.S. Patent No. 5,836,724).

5. Whether claim 9 was correctly rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 in view of Kress '483 and further in view of Breuning '842.

6. Whether claims 10-12 was correctly rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 and Kress '483 further in view of Royal '198 (U.S. Patent No. 4,848,198).

7. Whether claims 16-17 was correctly rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889, Kress '483 and further in view of Link '155 (U.S. Patent No. 5,876,155)

8. Whether claim 18 was correctly rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 in view of Kress '483 and further in view of Hellstrom '081 (U.S. Patent No. 6,004,081).

VII. Argument

Rejection of claims 2, 3 and 20-25

Claims 2, 3 and 20-25 were rejected as allegedly being unpatentable over Kress '889 in view of Kress '483.

The Examiner argues that Kress '889 substantially discloses all of the features of claim 2 of the present application, for example. The Examiner concedes that Kress '889 does not disclose a tool with "two supporting regions in the tool for supporting the cutter tip, the supporting regions having support surfaces against which the cutter tip rests, and the support surfaces of the supporting region are oriented with respect to each other at an angle, the supporting regions also being so oriented that a line bisecting the angle between the support surfaces runs essentially perpendicular to an active one of the cutting edges," "a clamping claw which holds the cutter tip to the supporting regions, the clamping claw comprising a clamping lip; wherein the clamping lip comes to rest on a front side of the cutter tip and engages the clamping notch, and wherein the tool and cutter tip thereof are both shaped to be operable for metal cutting machining of valve seats in cylinder heads of internal combustion engines," as is required by claim 2 of the present application. The Examiner argues, however, that Kress '483 discloses these features and that it would have been obvious to one of ordinary skill in the art to modify Kress '889 to include these features.

In addition, in the Advisory Action, the Examiner argues that Kress'483 clear shows in Figures 3 and 6, two support regions/surfaces 31 that support cutter tip 1 oriented with respect to each other at an angle such that a line bisecting the angle runs essentially perpendicular to an active cutting edge, which allegedly corresponds to the portion NS illustrated in Figure 3 of Kress '483. The Examiner further argues that the portion HS can also be considered another cutting edge. In addition, the Examiner argues that Kress '483 shows a cutting edge, portion NS, that is formed in a straight line between two adjacent corners of cutting tip 1. The Examiner also argues that the portion HS can also be considered another cutting edge and formed in a straight line between two adjacent corners. This is clearly incorrect.

As has been repeatedly noted in Applicants' previous response(s), Kress '483 relates to a specialized tool utilized for making holes. While Kress '483 may disclose a cutter plate that is a symmetrical polygon, the cutter plate of Kress et al. has a main cutter HS and an auxiliary cutter NS which have a rounded shape as illustrated in Fig. 3 of Kress '483. Kress '483 does not disclose two support regions or surfaces for supporting the cutter tip being oriented relative to each other at an angle such that a line bisecting the angle runs essentially perpendicular to an active cutting edge. The Examiner refers to the annotated Fig. 6 at page 3 of the final office Action in support of his argument that Kress '483 shows this feature. However, as was previously noted, the line that the Examiner draws on Fig. 6 to bisect the angle between the edges 31 does not bisect this angle. Further, even if it did, this line is also not perpendicular to a cutting edge of the tool. As is noted above, the cutting edge of Kress et al. has a rounded shape and includes elements HS and NS as illustrated in Fig. 3, for example. It is clear that the line drawn by the Examiner does not extend perpendicularly from any portion of any of the rounded cutting edge of Kress '483 much less an active cutting edge. The Examiner concedes that Kress'889 fails to disclose this feature.

In addition, Kress'889 and Kress'483 also fail to show or suggest a cutting edge"formed in a straight line between two adjacent corners of the cutter tip," as is required by claim 2, for example, of the present application. The Examiner argues that the portion "NS" in Kress '483 is formed in a straight line between two adjacent corners of the cutting tip. This is clearly incorrect. As is noted above, the cutting edge in Kress '483 is rounded, and thus, is not a straight line. Further, in Kress '889, the primary and secondary cutting edges are also at the rounded corner regions of the cutting tip. Thus, the cutting edge in both Kress '889 and Kress '483 is not formed in a straight line at all, but is rounded. Further, the Examiner also concedes in the Advisory Action that "the cutting edge (NS) does not extend to each of the adjacent corners of the cutting tip(1)." Thus, by the Examiner's own admission, Kress'483 does not disclose that the cutting edge is "formed in a straight line between two adjacent corners of the cutter tip," as is required by claim 2, for example of the present application.

It is well establish that in order to establish a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." See M.P.E.P. §2143. As discussed above both Kress '889 and Kress '483 fail to disclose "two supporting regions in the tool for supporting the cutter tip, the supporting regions having support

surfaces against which the cutter tip rests, and the support surfaces of the supporting region are oriented with respect to each other at an angle, the supporting regions also being so oriented that a line bisecting the angle between the support surfaces runs essentially perpendicular to an active one of the cutting edges," as is required by claim 2, for example of the present application. Further, neither of the Kress references relied on by the Examiner show or suggest a cutting edge "formed in a straight line between two adjacent corners of the cutter tip." Indeed, none of the references cited by the Examiner, either alone or in combination, cited by the Examiner show or suggest the features of claim 2 described above.

Claim 20 similarly requires a "cutting edge formed as a straight line between two adjacent corners of the cutter tip," and "two supporting regions in the tool for supporting the cutter tip, the supporting regions having support surfaces against which the cutter tip rests, and the support surfaces of the supporting region are oriented with respect to each other at an angle, the supporting regions also being so oriented that a line bisecting the angle between the support surfaces runs essentially perpendicular to an active one of the cutting edges." Both Kress '889 and Kress'483 fails to disclose these features, as is described above.

In addition, with regard to independent claim 23, both Kress '889 and Kress'483 fail to show or suggest a tool for metal cutting machining including a "cutting edge formed in a straight line between two adjacent corners of the cutter tip," and "two supporting regions in the tool for supporting the cutter tip, against which the cutter tip rests, and the supporting regions are oriented with respect to each other at an angle, the supporting regions also being so oriented that a line bisecting the angle between the supporting regions runs essentially perpendicular to an active one of the cutting edges.

Thus, it is believed that independent claims 2, 20 and 23, and the claims depending therefrom, including claims 3, 21, 22, 24 and 25 are patentable over the cited art.

Rejection of claims 4, 5 and 7

Claims 4, 5 and 7 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 in view of Kress '483 and further in view of Breuning '482.

Claims 4-5 and 7 depend from claim 2, either directly or indirectly. As noted above, claim 2 is believed to be patentable over Kress '889 in view of Kress '483. Further, it is

respectfully submitted that claim 2 is patentable over the combination of Kress '889 , Kress '483 and Breuning, since none of these references, either alone or in combination, show or suggest the patentable features of claim 2 described above.

Thus, it is respectfully submitted that claims 4, 5 and 7, which depend from claim 2, are also patentable over the cited art for at least the reasons described above.

Rejection of claim 6

Claim 6 has been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 in view of Kress '483 and further in view of Breuning '842 and Erickson '650.

Claim 6 depends indirectly from claim 2. As noted above, claim 2 is believed to be patentable over Kress '889 in view of Kress '483. Further, it is respectfully submitted that claim 2 is patentable over the combination of Kress '889, Kress '483, Breuning '842 and Erickson '650 since none of these references, either alone or in combination, show or suggest the patentable features of claim 2 described above.

Thus, it is respectfully submitted that claim 6, which is dependent on claim 2, is also patentable over the cited art.

Rejection of claim 8

Claim 8 has also been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 in view of Kress '483 and further in view of Breuning '842 and Satran '724.

Claim 8 depends indirectly from independent claim 2. As noted above, claim 2 is believed to be patentable over Kress '889 in view of Kress '483. Further, it is respectfully submitted that claim 2 is patentable over the combination of Kress '483, Kress '889, Breuning '842 and Satran '724, since none of these references, either alone or in combination, show or suggest the patentable features of claim 2 described above.

Thus, it is respectfully submitted that claim 8 which is dependent on claim 2 is also patentable over the cited art.

Rejection of claim 9

Claim 9 has also been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 in view of Kress '483 and further in view of Breuning '842.

Claim 9 depends from independent claim 2. As noted above, claim 2 is believed to be patentable over Kress '889 in view of Kress '483. Further, it is respectfully submitted that claim 2 is patentable over the combination of Kress '483, Kress '889 and Breuning '842, since none of these references, either alone or in combination, show or suggest the patentable features of claim 2 described above.

Thus, it is respectfully submitted that claim 9, which is dependent on claim 2, is also patentable over the cited art.

Rejection of claims 10-12

Claims 10-12 have also been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 and Kress '483 further in view of Royal '198.

Claims 10-12 depend from independent claim 2. As noted above, claim 2 is believed to be patentable over Kress '889 and Kress '483. Further, it is respectfully submitted that claim 2, is patentable over the combination of Kress '483, Kress '889 and Royal '198, since none of these references, either alone or in combination, show or suggest the patentable features of claim 2 described above.

Thus, it is respectfully submitted that claims 10-12 which depend from claim 2 are also patentable over the cited art for at least the reasons described above.

Rejection of claims 16-17

Claims 16-17 have also been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889, Kress '483 and further in view of Link '155.

Claims 16-17 depends from independent claim 2. As noted above, claim 2 is believed to be patentable over Kress '889 and Kress '483. Further, it is respectfully submitted that claim 2 is patentable over the combination of Kress '483 , Kress '889 and Link '155, since none of these

references, either alone or in combination, show or suggest the patentable features of claim 2 described above.

Thus, it is respectfully submitted that claims 16-17, which depend from claim 2, are also patentable over the cited art for at least the reasons described above.

Rejection of claim 18

Claim 18 has also been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kress '889 in view of Kress '483 and further in view of Hellstrom '081.

Claim 18 depends from independent claim 2. As noted above, claim 2 is believed to be patentable over Kress '889 in view of Kress '483. Further, it is respectfully submitted that claim 2 is patentable over the combination of Kress '889, Kress '483 and Hellstrom '081, since none of these references, either alone or in combination, show or suggest the patentable features of claim 2 described above.

Thus, it is respectfully submitted that claim 18, which depends from claim 2, is also patentable over the cited art for at least the reasons described above.

For at least the foregoing reasons, allowance of claims 2-12, 16-18, and 20-25 is requested.

VIII. Conclusion

In light of the above remarks, it is respectfully submitted that 2-12, 16-18, and 20-25 are patentable over the art cited by the Examiner and are also otherwise in condition for allowance.

Credit card payment in the amount of $500.00 to cover the 37 C.F.R. §41.20(b)(2) fee for filing an Appeal Brief is being submitted via EFS-WEB. Any additional fees or charges required at this time in connection with this application may be charged to Patent and Trademark Office Deposit Account No. 15-0700.

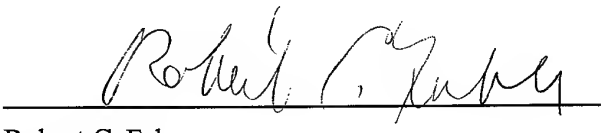
If this communication is filed after a shortened statutory time period has elapsed and no separate Petition is enclosed, the Commissioner of Patents and Trademarks is petitioned, under 37 C.F.R. §1.136(a), to extend the time for filing a response to the outstanding Office Action by

the number of months which will avoid abandonment under 37 C.F.R. §1.135. The fee under 37 C.F.R. §1.17 should be charged to our Deposit Account No. 15-0700.

In the event the actual fee is greater than the payment submitted or is inadvertently not enclosed or if any additional fee during the prosecution of this application is not paid, the Patent Office is authorized to charge the underpayment to Deposit Account No. 15-0700.

Respectfully submitted,

THIS CORRESPONDENCE IS BEING SUBMITTED ELECTRONICALLY THROUGH THE PATENT AND TRADEMARK OFFICE EFS FILING SYSTEM ON March 20, 2008.



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APPENDIX

The claims on appeal are:

Claim 2

A tool for metal cutting machining a surface in an opening, the tool comprising:

a cutter tip having at least one geometrically defined cutting edge, the cutting edge formed in a straight line between two adjacent corners of the cutter tip, wherein the cutter tip is a hexagonally shaped indexable tip and wherein an angle between each side of the cutter tip and an adjacent side is substantially the same for each side of the cutter tip;

the cutter tip having a front side with at least one clamping notch having a V-shaped cross-section formed in the front side;

two supporting regions in the tool for supporting the cutter tip, the supporting regions having support surfaces against which the cutter tip rests, and the support surfaces of the supporting region are oriented with respect to each other at an angle, the supporting regions also being so oriented that a line bisecting the angle between the support surfaces runs essentially perpendicular to an active one of the cutting edges, which is the edge that removes metal chips from the surface in the opening, wherein the cutter tip is turnable six times to make six cutting edges available for machining;

a clamping claw which holds the cutter tip to the supporting regions, the clamping claw comprising a clamping lip; wherein

the clamping lip comes to rest on a front side of the cutter tip and engages the clamping notch, and wherein the tool and cutter tip thereof are both shaped to be operable for metal cutting machining of valve seats in cylinder heads of internal combustion engines.

Claim 3

The tool of claim 2, wherein the tool includes a main body and the supporting regions are formed in the main body.

Claim 4

The tool of claim 2, wherein the tool has a main body and inserts in the main body are positioned for defining the respective supporting regions.

Claim 5

The tool of claim 4, wherein the inserts are essentially rectangular cross section shaped elements.

Claim 6

The tool of claim 4, wherein the inserts are pin-shaped elements.

Claim 7

The tool of claim 4, wherein the main body is comprised of a material of a first hardness and the inserts are comprised of a material of a greater hardness than the hardness of the main body.

Claim 8

The tool of claim 7, wherein the inserts are of a material selected from at least one of the group consisting of metal carbide, ceramic and cubical boron nitride.

Claim 9

The tool of claim 2, wherein the main body is shaped to define clearances around the cutting tip at least in regions of the tool at the supporting regions for the cutting tip.

Claim 10

The tool of claim 2, further comprising a feed for at least one of coolant and lubricant located in the tool for feeding at least one of coolant and lubricant to the cutting edge.

Claim 11

The tool of claim 10, wherein the clamping claw which holds the cutting tip to the supporting regions includes the feed for at least one of coolant and lubricant.

Claim 12

The tool of claim 11, wherein the feed for at least one of coolant and lubricant includes an elongate coolant outlet in the claw, the outlet runs essentially parallel to the then active cutter edge.

Claim 16

The tool of claim 2, wherein the cutter tip is tipped with cubical boron nitride.

Claim 17

The tool of claim 2, wherein the cutter tip has an external layer of cubical boron nitride for cutting purposes.

Claim 18

The tool of claim 2, wherein the cutter tip has a flank which includes regions of different angles of inclination.

Claim 20

A method for metal cutting machining of a surface in an opening comprising:

operating a tool to metal cut machine a surface in an opening, the tool comprising:

a cutter tip having at least one geometrically defined cutting edge, the cutting edge formed as a straight line between two adjacent corners of the cutter tip, wherein the cutter tip is a hexagonally shaped indexable tip and wherein an angle between each side of the cutter tip and an adjacent side is substantially the same for each side of the cutter tip;

the cutter tip having a front side with at least one clamping notch having a V-shaped cross-section formed in the front side;

two supporting regions in the tool for supporting the cutter tip, the supporting regions having support surfaces against which the cutter tip rests, and the support surfaces of the supporting region are oriented with respect to each other at an angle, the supporting regions also being so oriented that a line bisecting the angle between the support surfaces runs essentially perpendicular to an active one of the cutting edges, which is the edge that removes metal chips from the surface in the opening, wherein the cutter tip is turnable six times to make six cutting edges available for machining;

a clamping claw which holds the cutter tip to the supporting regions, the clamping claw comprising a clamping lip; wherein

the clamping lip comes to rest on a front side of the cutter tip and engages a clamping notch, and wherein the tool and cutter tip thereof are both shaped to be operable for metal cutting machining of valve seats in cylinder heads of internal combustion engines; and

wherein the cutter tip is not required to be reset or adjusted when a respective active cutting edge thereof becomes worn.

Claim 21

The method of claim 20, further comprising displacing the tool in the direction of a central axis of the opening being machined during machining of the metal surrounding the opening.

Claim 22

The method of claim 20, wherein the cutter tip is an indexable tip.

Claim 23

A tool for metal cutting machining a surface in an opening, the tool comprising:

a cutter tip having at least one geometrically defined cutting edge, the cutting edge formed in a straight line between two adjacent corners of the cutter tip, wherein the cutter tip is a polygon shaped indexable tip and wherein an angle between each side of the cutter tip and an adjacent side is substantially the same for each side of the cutter tip;

the cutter tip having a front side with at least one clamping notch having a V-shaped cross-section formed in the front side;

two supporting regions in the tool for supporting the cutter tip, against which the cutter tip rests, and the supporting regions are oriented with respect to each other at an angle, the supporting regions also being so oriented that a line bisecting the angle between the supporting regions runs essentially perpendicular to an active one of the cutting edges, which is the edge that removes metal chips from the surface in the opening, wherein the cutter tip is turnable to make multiple cutting edges available for machining;

a clamping claw which holds the cutter tip to the supporting regions, the clamping claw comprising a clamping lip; wherein

the clamping lip comes to rest on a front side of the cutter tip and engages the clamping notch, and wherein the tool and cutter tip thereof are both shaped to be operable for metal cutting machining of valve seats in cylinder heads of internal combustion engines.

Claim 24

The tool of claim 2, wherein the cutter tip is an indexable tip.

Claim 25

The tool of claim 2, wherein the cutter tip hexagonal in shape. An arrangement for allowing disengagement of a gear of a gearbox in a vehicle, wherein the vehicle includes an engine at least one powered wheel, a gearbox, and a driveline including a first driveline portion which extends from the engine, a second driveline portion which extends to the at least one powered wheel of the vehicle, and a specific element of the driveline between the first and the second portions,

the specific element being adapted to allow elastic rotation between the first and the second driveline portions when driving torque is being transmitted in the driveline; said arrangement comprising:

a first sensor operable to detect a position (P_1) of the first portion of the driveline, and a second sensor operable to detect a position (P_2) of the second portion of the driveline;

a control unit operable to store at least one measured value which is related to a reference angle (A_{REF}) between the position ($P_{1,\ REF}$) of the first portion and the position ($P_{2,\ REF}$) of the second portion when a gear is engaged in the gearbox, and is operable to initiate a control action so that said reference angle (A_{REF}) and a prevailing angle (A) between the first portion and the second portion are substantially equalized before the gear is disengaged.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None